

3W, 11V - 200V Surface Mount Silicon Zener Diode

FEATURES

- Photo Glass passivated junction
- Ideal for automated placement
- Low inductance
- Moisture sensitivity level: level 1, per J-STD-020
- AEC-Q101 qualified available: ordering code with suffix "H"
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- On-board DC/DC converter

MECHANICAL DATA

- Case: DO-214AA (SMB)
- Molding compound meets UL 94 V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 0.1 g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
V_Z	11 - 200	V
Test current I_{ZT}	1.9 – 34.1	mA
P_{tot}	3.0	W
$T_{J\ MAX}$	175	°C
Package	DO-214AA (SMB)	
Configuration	Single die	



DO-214AA (SMB)

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
DC power dissipation at $T_L=75^\circ\text{C}$, measure at zero lead length (Note 1) derate above 75°C	P_{tot}	3	W
Junction temperature	T_J	-55 to +175	°C
Storage temperature	T_{STG}	-55 to +175	°C

Note:

1. Mounted on Cu-Pad size 10mm x 10mm on PCB

THERMAL PERFORMANCE

PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance	$R_{\theta JL}$	21	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	59	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	23	°C/W

Thermal Performance Note: Units mounted on PCB (10mm x 10mm Cu pad test board)

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Device (Note 1)	Device Marking Code	Nominal Zener Voltage			Test current	Zener Impedance (Note 3)			Leakage Current		Maximum DC Zener Current
		V _Z @I _Z				I _{ZT}	Z _{ZT} @ I _{ZT}	Z _{ZK} @I _{ZK}	I _R @V _R	I _{ZM}	
		V			mA	Ω	Ω	mA	μA	V	mA(DC)
		Min.	Nom (Note 2)	Max.							
1PGSMB5926	P926B	10.45	11	11.55	34.1	5.5	550	0.25	1	8.4	136
1PGSMB5927	P927B	11.40	12	12.60	31.2	6.5	550	0.25	1	9.1	125
1PGSMB5928	P928B	12.35	13	13.65	28.8	7.0	550	0.25	1	9.9	115
1PGSMB5929	P929B	14.25	15	15.75	25.0	9.0	600	0.25	1	11.4	100
1PGSMB5930	P930B	15.20	16	16.80	23.4	10.0	600	0.25	1	12.2	94
1PGSMB5931	P931B	17.10	18	18.90	20.8	12.0	650	0.25	1	13.7	83
1PGSMB5932	P932B	19.00	20	21.00	18.7	14.0	650	0.25	1	15.2	75
1PGSMB5933	P933B	20.90	22	23.10	17.0	17.5	650	0.25	1	16.7	68
1PGSMB5934	P934B	22.80	24	25.20	15.6	19	700	0.25	1	18.2	63
1PGSMB5935	P935B	25.65	27	28.35	13.9	23	700	0.25	1	20.6	56
1PGSMB5936	P936B	28.50	30	31.50	12.5	26	750	0.25	1	22.8	50
1PGSMB5937	P937B	31.35	33	34.65	11.4	33	800	0.25	1	25.1	45
1PGSMB5938	P938B	34.20	36	37.80	10.4	38	850	0.25	1	27.4	42
1PGSMB5939	P939B	37.05	39	40.95	9.6	45	900	0.25	1	29.7	38
1PGSMB5940	P940B	40.85	43	45.15	8.7	53	950	0.25	1	32.7	35
1PGSMB5941	P941B	44.65	47	49.35	8.0	67	1000	0.25	1	35.8	32
1PGSMB5942	P942B	48.45	51	53.55	7.3	70	1100	0.25	1	38.8	29
1PGSMB5943	P943B	53.20	56	58.80	6.7	86	1300	0.25	1	42.6	27
1PGSMB5944	P944B	58.90	62	65.10	6.0	100	1500	0.25	1	47.1	24
1PGSMB5945	P945B	64.60	68	71.40	5.5	120	1700	0.25	1	51.7	22
1PGSMB5946	P946B	71.25	75	78.75	5.0	140	2000	0.25	1	56.0	20
1PGSMB5947	P947B	77.90	82	86.10	4.6	160	2500	0.25	1	62.2	18
1PGSMB5948	P948B	86.45	91	95.55	4.1	200	3000	0.25	1	69.2	16
1PGSMB5949	P949B	95.00	100	105.00	3.7	250	3100	0.25	1	76.0	15
1PGSMB5950	P950B	104.50	110	115.50	3.4	300	4000	0.25	1	83.6	13
1PGSMB5951	P951B	114.00	120	126.00	3.1	360	4500	0.25	1	91.2	12
1PGSMB5952	P952B	123.50	130	136.50	2.9	450	5000	0.25	1	98.8	11
1PGSMB5953	P953B	142.50	150	157.50	2.5	600	6000	0.25	1	114.0	10
1PGSMB5954	P954B	152.00	160	168.00	2.3	700	6500	0.25	1	121.6	9
1PGSMB5955	P955B	171.00	180	189.00	2.1	900	7000	0.25	1	136.8	8
1PGSMB5956	P956B	190.00	200	210.00	1.9	1200	8000	0.25	1	152.0	7

Notes:

1. Tolerance and type number designation the type numbers listed indicate a tolerance of 5%
2. Zener voltage (V_Z) measurement
Nominal Zener voltage is measured with the device junction in thermal equilibrium with ambient temperature 25°C

3. Zener impedance (Z_z) derivation : Z_{zT} and Z_{zK} are measured by dividing the AC voltage drop across the device by the AC current applied.

The specified limits are for I_z (AC) = 0.1 I_z (DC) with the AC frequency = 60 Hz

ORDERING INFORMATION			
ORDERING CODE (Note 1,2)	PACKAGE	PACKING	STATUS
1PGSMBxxxxHR5G	SMB	850 / 7" Plastic reel	Active
1PGSMBxxxxHR4G	SMB	3,000 / 13" Paper reel	NRND
1PGSMBxxxxHM4G	SMB	3,000 / 13" Plastic reel	Active
1PGSMBxxxx R5G	SMB	850 / 7" Plastic reel	Active
1PGSMBxxxx R4G	SMB	3,000 / 13" Paper reel	NRND
1PGSMBxxxx M4G	SMB	3,000 / 13" Plastic reel	Active

Note 1:

"xxxx" defines voltage from 11V
(1PGSMB5926) to 200V (1PGSMB5956)

Note 2:

"H" means AEC-Q101 qualified

CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 Steady State Power Derating

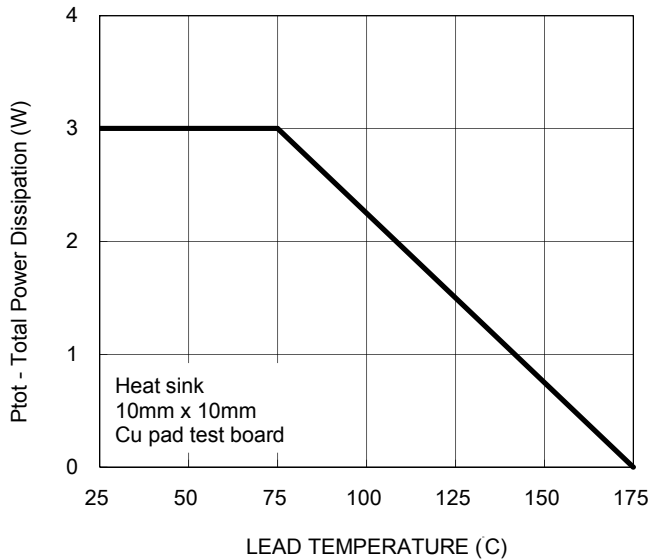


Fig.2 Typical Junction Capacitance

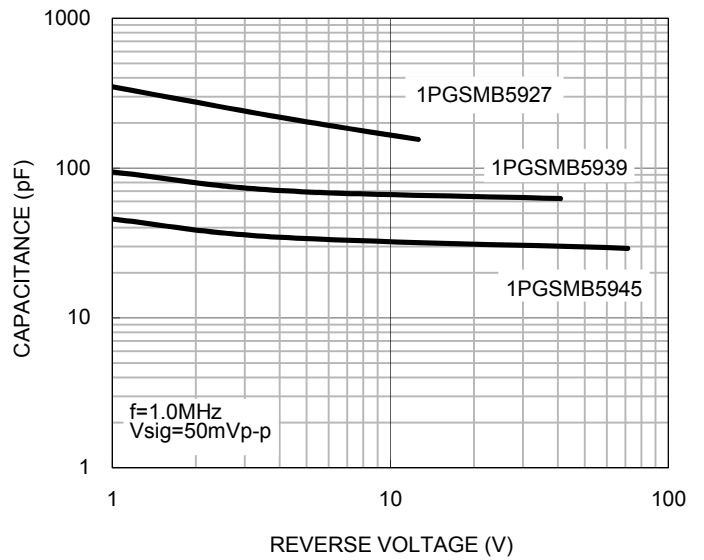
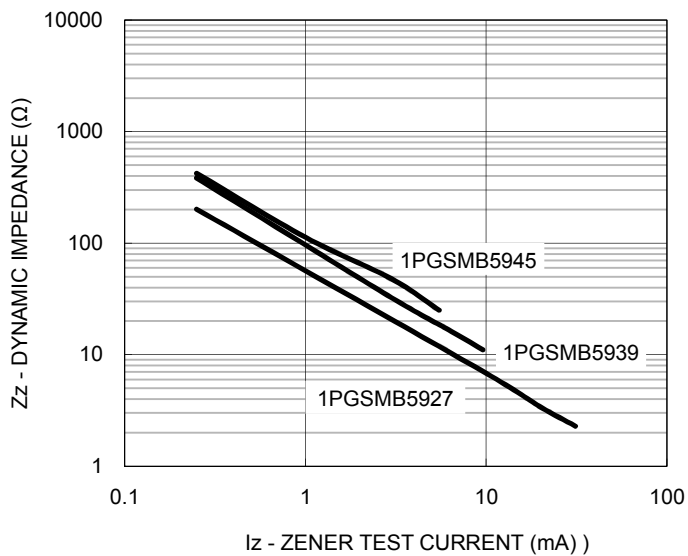
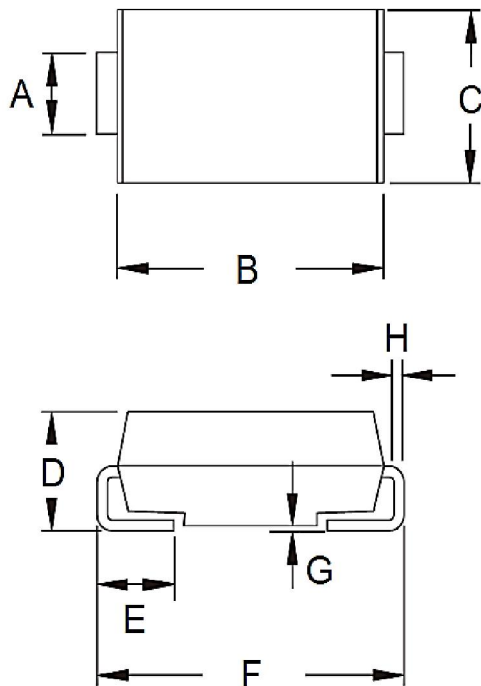


Fig.3 Typical Zener Impedance



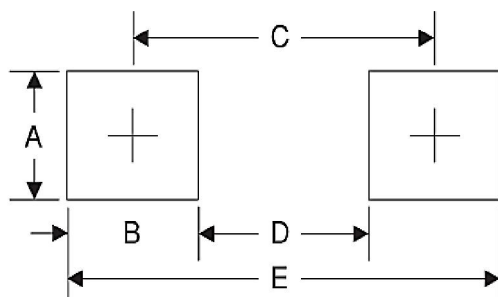
PACKAGE OUTLINE DIMENSIONS

DO-214AA (SMB)



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.95	2.20	0.077	0.087
B	4.05	4.60	0.159	0.181
C	3.30	3.95	0.130	0.156
D	1.95	2.65	0.077	0.104
E	0.75	1.60	0.030	0.063
F	5.10	5.60	0.201	0.220
G	0.05	0.20	0.002	0.008
H	0.15	0.31	0.006	0.012

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	2.3	0.091
B	2.5	0.098
C	4.3	0.169
D	1.8	0.071
E	6.8	0.268

MARKING DIAGRAM



P/N = Marking Code
 G = Green Compound
 YW = Date Code
 F = Factory Code

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<u>1PGSMC5348 V6G</u>	<u>1PGSMB5933HM4G</u>	<u>1PGSMB5943 M4G</u>	<u>1PGSMB5943HR5G</u>	<u>1PGSMB5946 M4G</u>
<u>1PGSMB5950 R5G</u>	<u>1PGSMB5932 M4G</u>	<u>1PGSMB5941HM4G</u>	<u>1PGSMB5953 R5G</u>	<u>1PGSMB5950HM4G</u>
<u>1PGSMB5926 M4G</u>	<u>1PGSMB5944 R5G</u>	<u>1PGSMB5947 M4G</u>	<u>1PGSMB5928 R5G</u>	<u>1PGSMB5927HM4G</u>
<u>1PGSMB5947 R5G</u>	<u>1PGSMB5938HR5G</u>	<u>1PGSMB5944HR5G</u>	<u>1PGSMB5948HR5G</u>	<u>1PGSMB5936 M4G</u>
<u>1PGSMB5945HR5G</u>	<u>1PGSMB5943HM4G</u>	<u>1PGSMB5927 M4G</u>	<u>1PGSMB5952HM4G</u>	<u>1PGSMB5937 R5G</u>
<u>1PGSMB5940HR5G</u>	<u>1PGSMB5948HM4G</u>	<u>1PGSMB5954HR5G</u>	<u>1PGSMB5946 R5G</u>	<u>1PGSMB5946HM4G</u>
<u>1PGSMB5936HR5G</u>	<u>1PGSMB5940 R5G</u>	<u>1PGSMB5949 R5G</u>	<u>1PGSMB5941HR5G</u>	<u>1PGSMB5953 M4G</u>
<u>1PGSMB5946HR5G</u>	<u>1PGSMB5956HM4G</u>	<u>1PGSMB5933 M4G</u>	<u>1PGSMB5930HM4G</u>	<u>1PGSMB5940 M4G</u>
<u>1PGSMB5934 M4G</u>	<u>1PGSMB5928HM4G</u>	<u>1PGSMB5945 M4G</u>	<u>1PGSMB5950 M4G</u>	<u>1PGSMB5951HM4G</u>
<u>1PGSMB5936HM4G</u>	<u>1PGSMB5954 M4G</u>	<u>1PGSMB5952 M4G</u>	<u>1PGSMB5931HM4G</u>	<u>1PGSMB5932 R5G</u>
<u>1PGSMB5939HM4G</u>	<u>1PGSMB5950HR5G</u>	<u>1PGSMB5941 M4G</u>	<u>1PGSMB5952HR5G</u>	<u>1PGSMB5955HM4G</u>
<u>1PGSMB5938HM4G</u>	<u>1PGSMB5952 R5G</u>	<u>1PGSMB5953HR5G</u>	<u>1PGSMB5947HR5G</u>	<u>1PGSMB5937 M4G</u>
<u>1PGSMB5934HM4G</u>	<u>1PGSMB5930 M4G</u>	<u>1PGSMB5932HR5G</u>	<u>1PGSMB5943 R5G</u>	<u>1PGSMB5941 R5G</u>
<u>1PGSMB5929 M4G</u>	<u>1PGSMB5942HM4G</u>	<u>1PGSMB5942 M4G</u>	<u>1PGSMB5935HM4G</u>	<u>1PGSMB5947HM4G</u>
<u>1PGSMB5936 R5G</u>	<u>1PGSMB5948 M4G</u>	<u>1PGSMB5931HR5G</u>	<u>1PGSMB5931 R5G</u>	<u>1PGSMB5938 M4G</u>
<u>1PGSMB5935 M4G</u>	<u>1PGSMB5944HM4G</u>	<u>1PGSMB5932HM4G</u>	<u>1PGSMB5939 M4G</u>	<u>1PGSMB5948 R5G</u>
<u>1PGSMB5945HM4G</u>	<u>1PGSMB5956 M4G</u>	<u>1PGSMB5928HR5G</u>	<u>1PGSMB5954HM4G</u>	<u>1PGSMB5954 R5G</u>
<u>1PGSMB5949HR5G</u>	<u>1PGSMB5937HM4G</u>	<u>1PGSMB5939 R5G</u>	<u>1PGSMB5926HM4G</u>	<u>1PGSMB5937HR5G</u>
<u>1PGSMB5949 M4G</u>	<u>1PGSMB5955 R5G</u>	<u>1PGSMB5940HM4G</u>	<u>1PGSMB5931 M4G</u>	<u>1PGSMB5949HM4G</u>
<u>1PGSMB5951 M4G</u>	<u>1PGSMB5944 M4G</u>	<u>1PGSMB5945 R5G</u>	<u>1PGSMB5938 R5G</u>	<u>1PGSMB5929HM4G</u>